

In view of the very long range nature of these projections, and the many variable factors involved, the deficiency for the old-age and survivors insurance system under the intermediate-cost estimate is relatively small, and so the system may be said to be in approximate actuarial balance. Under the intermediate-cost estimate the old-age and survivors insurance trust fund would have a balance of more than \$55 billion in the year 2025 and thus there is ample time in the future to make any adjustments which might be needed in the light of further experience and of future estimates. The disability insurance program shows a small surplus according to the intermediate-cost estimate. However, considering the variability of cost estimates for disability benefits, this program also may be considered in approximate actuarial balance, and this small actuarial excess is certainly no more than a moderate safety factor.

A discussion of the assumptions upon which these tables have been calculated is presented in appendix I.

#### CONCLUSION

During the past 5 fiscal years, the contribution income of the old-age and survivors insurance trust fund has increased substantially for a number of reasons. In addition to a rise in earnings levels and the normal growth of the labor force as the population becomes larger, contribution rates increased in 1954; moreover, coverage was extended to additional employments by the 1954 and 1956 amendments and the maximum limit on taxable earnings was raised in 1955. With the growth of the trust fund, interest received on investments has also increased.

Trust fund disbursements, however, have risen even more sharply than contribution income. Basic factors in this increase are the long-term growth in the aged population and, more significantly, the lengthening period during which workers have had an opportunity to earn the quarters of coverage required to be insured. More immediate causes have been the amendments to the Social Security Act during 1950-56, which have extended the program's coverage, lowered the requirements for eligibility to benefits for persons who retire and for the survivors of individuals who die in the early years of the program, reduced the retirement age of women from 65 to 62, increased the benefits payable, and liberalized the retirement test. As a result of the rapid rise in disbursements, the trust fund's receipts in fiscal year 1957 exceeded its disbursements by only \$436 million.

Long-range cost estimates show that for practical purposes the old-age and survivors insurance program is in actuarial balance according to the best available cost estimates. This concept means that for the long-range future, the system will have sufficient income from contributions based on the tax schedule now in the law and from interest earned on investments to meet all future payments for benefits and administrative expenses. Although aggregate disbursements of the old-age and survivors insurance trust fund over the period of the next several years are estimated to exceed aggregate receipts—a situation which, however, will be only temporary—there will be ample funds on hand to meet expenditures of the program during this period. The trust fund is intended to serve as a contingency fund as well as a source of investment income to supplement contribution receipts, and

it is to be expected therefore that the fund may be drawn upon from time to time. Temporary periods when the assets of the fund decline are not in themselves an indication of financial weakness and do not change the fact that the program is for practical purposes in actuarial balance.

Aggregate income of the disability insurance trust fund will be wholly sufficient during the period immediately ahead to meet aggregate disbursements and in fact will build up a substantial fund. Long-range cost estimates show that the disability insurance program is more than in actuarial balance.

In its annual reports, the Board of Trustees has emphasized that the continued financial soundness of the old-age and survivors insurance and disability insurance programs is a major concern both to the contributors and to the Nation as a whole. The 1956 amendments to the Social Security Act provided for a careful review of both the short-range and long-range financial aspects of the old-age and survivors insurance program by a representative advisory council before each of the scheduled contribution rate increases. The first Advisory Council on Social Security Financing has now been appointed under these provisions. This Council's study can be expected to result in findings which will help to assure the continued financial strength of these programs and to maintain public confidence in the economic security they provide.

## APPENDIXES

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### APPENDIX I. DETAILED LONG-RANGE COST ESTIMATES

The cost estimates presented in this report are a complete revision, both as to assumptions and methodology, of the estimates presented last year. The actual operating experience in the last 3 or 4 years has thus been taken into account in establishing the new assumptions. More detailed information on these new cost estimates, including an analysis of how they compare with the previous cost estimates and the reasons for the differences, will be presented in two actuarial studies soon to be released by the Social Security Administration.

The estimates are based on level earnings assumptions (intended to represent about the 1956 level). If the earnings level in the future should be considerably above that which now prevails, and if at the same time the benefits for those on the roll are adjusted upward so that annual costs in relation to payroll remain the same, then the resulting increased dollar outgo will offset the increased dollar income. This is an important reason for considering costs relative to payroll rather than in dollars.

The cost estimates have not taken into account the possibility of a rise in earnings levels, although such rises have characterized the past history of this country. If such an assumption were used in the cost estimates and if the benefit formula were nevertheless unchanged, the cost relative to payroll would, of course, be lower. If benefits are adjusted continuously and without any timelag to keep pace with rising earnings trends, the year-by-year costs as a percentage of payroll would be unaffected. Such an adjustment, however, would raise the level-premium cost, since under these circumstances the relative value of the interest earnings on the trust fund would diminish with the passage of time.

A useful concept of long-range cost is the level-premium contribution rate required to support the system in perpetuity. This rate is obtained by discounting future benefits and assumed contributions at compound interest and assuming that benefit payments and taxable payrolls remain level after the year 2050. If such a level rate were adopted, relatively large accumulations in the trust fund would result, and in consequence there would also be sizable eventual income from interest. Even though such a method of financing is not followed, this concept provides a useful measure of long-range costs which takes into account the heavy deferred load.

(a) *Population growth.*—The future trend of the population depends on the size and age distribution of the existing population, on future births and immigration, and on future deaths and emigration. In making use of the extensive census and vital statistics data available, one must be aware of the presence of various types of error and bias

(fully recognized and analyzed in their publications by the Bureau of the Census and the National Office of Vital Statistics).

Crude birthrates declined for many years until about 1935, due in part to the increasing proportion of the female population past the childbearing ages, and in part to a decline in age-specific birthrates. However, since 1937 the long decline of the birthrate has been reversed. During the war years, high birthrates were reported, the wartime peak being reached in 1943. Although there was some decline in 1944-45, the birthrate remained higher than at any time during the thirties, despite the fact that the war removed many potential fathers from the country. Beginning in 1946, a very rapid rise occurred, and the birthrate for the 12-month period ending June 1947 was higher than at any time since the beginning of World War I. The peak was followed by some decline and a subsequent rise in 1951-56, which did not quite reach the 1947 level. However, detailed analysis based on age of mother indicates that fertility in 1956 was really higher than in 1947.

Net immigration had been very heavy prior to 1915 and moderate in the early twenties, but was quite negligible thereafter. Most population forecasts have assumed that no return to high net immigration rates may be expected.

As a basis for long-range cost estimates, two population projections are developed. These do not reflect the maximum possible range in population which might develop in the future, but rather embody combinations of factors which produce either low costs or high costs in regard to old-age and survivors insurance: for example, unfavorable mortality assumptions versus favorable ones. The population projections underlying the cost figures presented here were published in Actuarial Study No. 46 of the Social Security Administration (Illustrative United States Population Projections)

(b) *Mortality.*—Mortality rates by age have been decreasing steadily since the turn of the century for both sexes and for virtually all ages up to age 60. Although there was relatively little change above that age during the first four decades, significant improvement has occurred during the past decade and a half.

In both the low-cost and high-cost assumptions, continued improvement in mortality rates at all ages is postulated. However, the degree of improvement embodied in the high-cost assumptions is substantially greater. While both sets of assumptions are necessarily arbitrary, they may reasonably be taken as delineating, for the purposes of this report, the range within which mortality rates will fall.

(c) *Amount of covered employment.*—In estimating the number of covered persons, percentages of men and women in each age group who are in covered employment are developed through analysis of past wage data for the groups already covered, along with such data relating to the newly covered groups as can be obtained from censuses and other sources. The level of employment assumed is slightly below that prevailing in 1955-56.

It is assumed that about 95 percent of all males in the country aged 25-39 have covered earnings in the course of a year, the ratio decreasing to about 75 percent for ages 60-64. For women the corresponding proportions are 45 percent for ages 25-49 and 25 percent for ages 60-64. Further, about 90 percent of covered men aged 25-59 are assumed to work in all 4 quarters, with somewhat lower

proportions at the youngest and oldest ages. For women, the proportions used were about 55-60 percent for ages 20-39 and about 75 percent for ages 45 and over. It is assumed that in the future the proportion of women who will be in covered employment will gradually rise for each age group, since in recent years they have been participating more and more in covered employment.

(d) *Insured population.*—The number of persons who gain protection through becoming “fully insured” or “currently insured” under old-age and survivors insurance and “fully insured,” “currently insured,” and “disability insured” under disability insurance depends upon the volume and pattern of their work in covered employment and upon the amount of taxable earnings from such work. A discussion of the latter factor is presented subsequently in item (i).

(e) *Marital status and family composition.*—Marital relationships by age have great significance for old-age and survivors insurance costs because the system provides benefits for aged wives and widows (and also for aged dependent husbands and widowers). A woman 62 or over cannot draw both the old-age benefit based on her own earnings and a full wife's, widow's, or parent's benefit based on her husband's or child's earnings. Hence, it is necessary to consider both the marital status and the insured status of aged females. A relatively large cost offset occurs on account of the provision which prohibits duplication of benefits. The experience to date is still rather limited in this respect (in December 1956 about 143,000 such dual beneficiaries had smaller old-age benefits, and an unknown number had larger old-age benefits and thus did not receive the supplementary or survivor benefit). This factor will not reach its full magnitude until almost 2050 when all aged females will have had covered employment at the ultimate assumed rates.

Family composition data, indicating the proportion of individuals with children and the average number of children per family, also have great significance, because the system provides benefits for orphaned children and their widowed mothers. The future birthrate has an important role in this connection since it determines not only the total number of children, but also how they are divided up into families. The actual claims experience, too, is valuable as a guide.

There must also be considered the factors resulting in termination of married status, divorce, and mortality. The distribution of ages of husbands and wives also affects the cost estimates. Various studies have indicated that at almost all ages women have lower mortality rates than men and that the mortality rates of married persons are lower than those for all persons combined. In the cost estimates differential mortality by marital status has been considered in determining costs for the various types of benefits.

Aged beneficiaries and their dependents are composed of a number of different categories. Table 16 shows the projected trends in the number of beneficiaries, distinguishing between old-age beneficiaries (retired workers), wives and dependent husbands of old-age beneficiaries, children of old-age beneficiaries, aged widows and dependent widowers of deceased insured individuals, and dependent parents of deceased insured workers who left no widows or eligible children. It has been assumed that all retired persons eligible to receive old-age benefits based on their own earnings would apply for and receive these benefits even though they might be entitled to larger wife's

husband's, widow's, widower's, or parent's benefits (which instead would be paid as reduced supplementary amounts). This assumption is made because it is rarely to the individual's disadvantage, and may be to his advantage, to receive old-age benefits and reduced supplementary benefits of another category, rather than to receive solely the full benefits of the supplementary category.

TABLE 16.—*Estimated monthly aged beneficiaries,<sup>1</sup> males aged 65 and over, females aged 62 and over, and children of old-age beneficiaries, in current-payment status 1970-2050*

[In thousands]

Calendar year	Old-age beneficiaries	Wives of old-age beneficiaries <sup>2</sup>	Children of old-age beneficiaries	Aged widows	Dependent parents
Actual data for December					
1950.....	1,771	502	46	306	14
1951.....	2,278	634	68	370	19
1952.....	2,644	724	75	434	21
1953.....	3,222	865	90	511	22
1954.....	3,775	983	107	596	24
1955.....	4,474	1,144	122	701	25
1956.....	5,112	1,376	131	913	27
1957.....	6,198	1,779	184	1,095	29
Low-cost estimate					
1970.....	9,712	2,302	176	2,618	26
1980.....	13,312	2,713	232	3,421	23
2000.....	18,751	2,967	265	4,287	17
2050.....	45,694	5,492	627	8,554	25
High-cost estimate					
1970.....	11,323	2,558	204	2,392	25
1980.....	16,533	3,221	288	2,896	21
2000.....	26,120	3,867	384	3,684	12
2050.....	48,853	4,592	678	4,937	12

<sup>1</sup> Persons qualifying both for old-age benefits and for wife's, widow's, husband's, widower's, and parents benefits are shown only as old-age beneficiaries.

<sup>2</sup> Including dependent husbands and wives of any age with child beneficiaries in their care (both relatively small categories).

NOTE.—The figures in this table are based on high-employment assumptions.

Although aged persons make up the bulk of the prospective beneficiaries under the program, the young survivors, composed of orphaned children and widowed mothers, will receive a considerable amount of benefits. Table 17 lists these two groups separately.

TABLE 17.—*Estimated younger survivor monthly beneficiaries in current-payment status, 1970-2050*

[In thousands]

Calendar year	Orphaned children	Widowed mothers
	Actual data for December	
1950 .....	653	169
1951 .....	778	204
1952 .....	864	229
1953 .....	963	254
1954 .....	1,054	272
1955 .....	1,154	292
1956 .....	1,210	301
1957 .....	1,318	328
	Low-cost estimate	
1970 .....	1,901	425
1980 .....	2,064	462
2000 .....	2,429	544
2050 .....	2,639	591
	High-cost estimate	
1970 .....	1,488	406
1980 .....	1,325	362
2000 .....	1,201	328
2050 .....	1,167	319

NOTE.—The estimated figures in this table are based on high-employment assumptions.

The high-cost assumptions show, as expected, a relatively larger number of old-age beneficiaries and their dependents, than the low-cost assumptions (table 16). This is in part because of the assumed lower mortality rates, which result in a greater proportion of aged persons, and in part because of the higher retirement rates assumed and the greater proportion of the population assumed to be insured as a result of more movement between covered employment and noncovered employment, unemployment, or nonemployment. On the other hand, the lower mortality tends to have the opposite effect in regard to widows (table 16) and, together with the somewhat lower birthrates, in regard to younger survivors (table 17); thus a smaller number of survivor beneficiaries is indicated under the high-cost assumptions than under the low-cost assumptions.

Table 18 summarizes the previous discussion by showing illustrative numbers of aged and survivor beneficiaries as well as monthly

disability beneficiaries and lump-sum death payments. Widows, widowers, and parents who are at or beyond the minimum retirement age (65 for men and 62 for women) are included under the aged category, as are also spouses and dependent children of old-age beneficiaries.

TABLE 18.—*Estimated old-age, survivor, and disability insurance beneficiaries in current-payment status, 1970-2050*

[In thousands]

Calendar year	Aged beneficiaries <sup>1</sup>	Younger survivors	Monthly disability <sup>2</sup>	Lump-sum death payments <sup>3</sup>
Actual data for December				
1950.....	2,639	823	-----	200
1951.....	3,370	982	-----	414
1952.....	3,897	1,093	-----	438
1953.....	4,711	1,217	-----	512
1954.....	5,484	1,326	-----	516
1955.....	6,466	1,446	-----	567
1956.....	7,559	1,511	-----	547
1957.....	9,284	1,647	150	689
Low-cost estimate <sup>4</sup>				
1970.....	14,834	2,326	563	1,110
1980.....	19,701	2,526	702	1,348
2000.....	26,287	2,973	866	1,870
2050.....	60,392	3,230	1,896	4,121
High-cost estimate <sup>4</sup>				
1970.....	16,502	1,894	1,130	1,066
1980.....	22,959	1,687	1,408	1,258
2000.....	34,067	1,529	1,753	1,822
2050.....	59,072	1,486	2,545	3,267

<sup>1</sup> Including children of old-age beneficiaries and wives under age 65 having such children in their care.

<sup>2</sup> When disability beneficiaries attain age 65, they are reclassified as old-age beneficiaries.

<sup>3</sup> Number of deaths resulting in lump-sum payments during the year.

<sup>4</sup> A average number of beneficiaries on the roll during the year (except as to lump-sum death payments; see footnote 3).

NOTE.—The estimated figures in this table are based on high-employment assumptions.

In tables 16 to 18 only potential long-range trends have been set down, without recognition of cyclical or periodic fluctuations. Bearing this in mind, certain trends may be observed in these illustrative tables of number of beneficiaries.

(1) An overall uptrend in beneficiaries under all types of benefits payable to aged persons and their dependents;

(2) A relatively small increase under the low-cost assumptions and a leveling off under the high-cost assumptions in the number of orphan-child and widowed-mother beneficiaries.

(3) A relatively small, and increasingly smaller, proportion of all benefits represented by younger survivor benefits.

(4) A relatively rapid advance in the proportion of fully insured persons aged 65 and over (including those drawing benefits) as compared with the rise in the proportion fully insured at ages 20-64; and

(5) A rapid rise in the percent of aged persons receiving old-age benefits.

(f) *Remarriage rates.*—Remarriage of young widows is an important cost factor since it results in termination of mother's insurance bene-



fits and also of rights to deferred widow's benefits at age 62. The greatest potential duration of benefits occurs among the younger widows, who can receive benefits for many years as mothers of young children and later as aged widows. These, however, are also the women with the greatest chance of remarriage. Among the older mothers with fewer prospective years of benefit receipt (their youngest child being nearer age 18), the probability of remarriage is smaller. Remarriage rates vary both by age of the widow and by duration of widowhood.

(g) *Disability benefits.*—In making the estimates for monthly disability benefits, which were added by the 1956 amendments, the following assumptions were used:

In the high-cost estimates, disability incidence rates for men are based on the so-called 165 percent modification of class 3 rates (which includes increasingly higher percentages for ages above 45); this 165 percent modification corresponds roughly to life insurance company experience during the early 1930's. Incidence rates assumed for women are 100 percent higher than for men. Termination rates are class 3 rates (relatively high—to be consistent with the high incidence rates assumed).

For the low-cost estimates, disability incidence rates for men have been taken at 25 percent of those used in the high-cost estimates, or, in other words, about 45 percent of the class 3 rates. Incidence rates assumed for women are 50 percent higher than for men. Termination rates are based on German social insurance experience for 1924–27, which is the best available experience as to relatively low disability termination rates which are to be anticipated in conjunction with low incidence rates.

The incidence rates actually used for both estimates are 10 percent below the above rates because, unlike the general definition in insurance company policies, disability is not presumed to be total and of expected long continued duration after 6 months' duration, but, rather, permanence must be proved at that time.

The new estimates make allowance for the very considerable savings due to offset of workmen's compensation benefits and other Federal disability benefits (other than veterans' service-connected benefits) against the social-security disability benefits. This is a very significant factor in the next 30 years (although not so much so thereafter when veterans' non-service-connected disability benefits will cease to be of importance for persons under age 65).

It will be noted that the low-cost estimate includes low incidence rates (which, taken by themselves, produce low costs) and also low termination rates (which, taken by themselves, produce higher costs, but which are considered to be necessary since with low incidence rates there would tend to be low termination rates because there would be few recoveries). On the other hand, the high-cost estimate contains high incidence rates that are somewhat offset by high termination rates.

It is believed that these cost estimates for the monthly disability benefits are as good an indication of such costs as are now possible. Nevertheless, it is recognized that in a new field such as this, more valid estimates are possible only after operating experience has developed from the program being in effect for several years. Disability incidence and termination rates can vary widely, much more so than the mortality rates which underlie retirement and survivor benefit cost calculations.

Benefits as percentages of payroll for selected years are shown in table 13, while table 18 contains the estimated number of beneficiaries in current payment status for selected years.

(h) *Employment of beneficiaries.*—Since monthly benefits for all categories of beneficiaries are, in effect, suspended in any month in which the beneficiary is under age 72 and has more earnings than are permitted (without suspension of benefits) under the retirement test, assumptions as to the employment of beneficiaries rank high in importance among the various cost elements. In December 1956, 74 percent of those aged 65 and over who were fully insured were actually receiving benefits. The proportion in the age group 65-71 is influenced to some extent by work opportunities for the aged. In the future, this proportion will probably increase somewhat, if for no other reason that the aging of the insured population. There is assumed to be more employment of beneficiaries, with consequent savings in cost, in the low-cost assumptions than in the high-cost ones. Recent experience seems to indicate that retirement rates have been somewhat higher than those used in the cost estimates.

(i) *Earnings in covered employment.*—One of the most striking changes in earned income on record has taken place since 1940. Not only have there been further rises in the hourly rate of earnings since the end of World War II, including a sharp rise following the outbreak of the Korean conflict, but also unemployment, including partial unemployment, has been relatively low so that most workers have had a full workweek (table 19).

TABLE 19.—Average earnings credits of workers under old-age and survivors insurance by years, 1937-56

Calendar year	Workers with any earnings in year			Workers with earnings in all 4 calendar quarters <sup>1</sup>		
	Total	Male	Female	Total	Male	Female
\$3,000 maximum earnings base						
1937.....	\$899	\$1,037	\$539	( <sup>2</sup> )	( <sup>2</sup> )	( <sup>2</sup> )
1938.....	832	958	507	\$1,211	\$1,359	\$783
1939.....	881	1,014	536	1,247	1,400	800
1940.....	926	1,070	553	1,305	1,465	831
1941.....	1,014	1,188	574	1,466	1,646	910
1942.....	1,127	1,364	609	1,703	1,939	1,047
1943.....	1,259	1,580	788	1,913	2,205	1,271
1944.....	1,369	1,681	887	1,996	2,301	1,402
1945.....	1,328	1,591	895	1,982	2,293	1,384
1946.....	1,394	1,635	929	2,031	2,269	1,480
1947.....	1,591	1,831	1,044	2,173	2,393	1,611
1948.....	1,677	1,939	1,138	2,281	2,493	1,733
1949.....	1,711	1,964	1,185	2,298	2,508	1,763
1950.....	1,769	2,026	1,232	2,376	2,579	1,852
\$3,600 maximum earnings base						
1951.....	\$2,039	\$2,396	\$1,335	\$2,672	\$2,956	\$1,945
1952.....	2,110	2,470	1,420	2,760	3,030	2,050
1953.....	2,180	2,530	1,500	2,820	3,100	2,160
1954.....	2,190	2,530	1,530	2,830	3,100	2,170
\$4,200 maximum earnings base						
1955 <sup>3</sup> .....	\$2,360	\$2,760	\$1,600	\$3,050	\$3,360	\$2,280
1956 <sup>3</sup> .....	2,500	2,900	1,700	3,100	3,400	2,300

<sup>1</sup> All covered self-employed workers (beginning in 1951) are considered to be 4-quarter workers.

<sup>2</sup> Data not available.

<sup>3</sup> Preliminary.

The higher earnings rate gives workers relatively more chance of obtaining credit for quarters of coverage (at \$50 of wages per quarter) now than in the prewar years, thus effecting an increase in the number of persons with insured status and in the average wage used for benefit computations. These increases are assumed to be more or less permanent.

The 1956 earnings level is assumed to continue indefinitely for both the low-cost and high-cost estimates. More precisely, it is assumed that average annual credited earnings remain at the 1956 level (after adjusting to take into account the earnings of the employment categories covered in 1957 and subsequently) in each of the following four categories: Male 4-quarter workers, male workers with less than 4 quarters of coverage in a given year, female 4-quarter workers, and female workers with less than 4 quarters of coverage. All covered self-employed workers are taken to be 4-quarter workers since they are always credited with 4 quarters of coverage.

The relatively small variation in earnings by age within each of these groups was ignored. The extent of variation is illustrated by the following 1954 data for 4-quarter wage and salary workers (rounded to the nearest \$50): For men, the average was \$3,100 for all ages combined and \$2,700 for ages 20-24, between \$3,150 and \$3,250 for each group from ages 25-29 to 55-59, \$3,050 for ages 60-64, \$2,850 for ages 65-69, and \$2,400 for ages 70 and over; for women, the average was \$2,150 for all ages combined and was between \$2,200 and \$2,300 for each group from ages 20-24 to 50-54, \$2,150 for ages 55-59, \$2,000 for ages 60-64, \$1,750 for ages 65-69, and \$1,600 for ages 70 and over.

For each of the four groups, the 1955 average credited earnings (i. e., excluding amounts in excess of \$4,200) was obtained. Some estimating was necessary since the 1955 data available at the time the cost estimates were made were preliminary and did not provide the complete breakdown into the four groups. Using the very limited data available for 1956, the 1955 figures were increased somewhat to give estimates for 1956 as shown below:

Category	Males	Females
4-quarter workers	\$3,420	\$2,430
1-, 2-, and 3-quarter workers	970	620

The 4-quarter earnings assumptions may be compared with the actual experience for such workers in the past years as shown by the last 2 columns of table 19, but allowance must be made for the changes in the maximum earnings base. Thus, for example, if the base had remained unchanged from 1954 to 1955, there would have been no significant rise in the average earnings figures.

Development of the prospective cost of the program using the various elements discussed furnishes reasonable illustrations of the number of future beneficiaries and costs. The values derived are well within the outside boundaries of possibility, and by no means either the lowest or the highest conceivable. Experience to date is limited; the payment of monthly benefits began in 1940, and these benefits were revised drastically in 1950 and again moderately in 1952, 1954, and 1956. As payments got underway, limitations of coverage

and the insured-status requirement excluded larger numbers of potential beneficiaries. In recent years, as the lag diminished and coverage expanded, payments have been limited by delayed claiming of benefits occasioned by favorable employment conditions during the war and postwar years. The long-range cost estimates look beyond these limitations and attempt to furnish some indication of the future trend in costs of the old-age and survivors insurance program.

It is to be noted that in addition to the assumptions already discussed, the long-range cost illustrations include assumptions relating to the interest rate and to various miscellaneous administrative factors. Since the earlier cost estimates were developed, sufficient actual experience under the operation of the program is available to permit the introduction of various modifications to allow for such factors as the minimum and maximum benefit provisions, and the provision that in certain instances the lump-sum death payment may not exceed the actual burial expenses. Also taken into account are such miscellaneous factors as differential retirement rates by marital status and the effect of possibly lowered earning capacity during the last illness on the size of survivor benefits.

An important element affecting old-age and survivors insurance costs arose through amendments made to the Railroad Retirement Act in 1951. These provide for a coordination of railroad retirement compensation and old-age and survivors insurance covered earnings in determining benefits for those with less than 10 years of railroad service. All future cases involving less than 10 years of railroad service are to be paid by the old-age and survivors insurance system.

Financial interchange provisions are established so that the old-age and survivors insurance trust fund and the disability insurance trust fund are to be placed in the same financial position in which they would have been if there never had been a separate railroad retirement program. It is estimated that, over the long range, the net effect of these provisions will be a relatively small gain to the old-age, survivors, and disability insurance system since the reimbursements from the railroad retirement system will be somewhat larger than the net additional benefits paid on the basis of railroad earnings.

The long-range cost estimates of income and outgo are presented in the body of the report in tables 13, 14, and 15, the first showing the benefit costs relative to payroll and the latter two showing the progress of the trust funds. In addition to the figures for the low-cost and high-cost estimates, resulting from two carefully considered series of assumptions, intermediate-cost estimates have been developed. The latter are merely an average of the low-cost and high-cost estimates of beneficiaries, disbursements, and income of the trust funds; they are not intended to represent "most probable" figures. Rather, they have been set down as a convenient and readily available single set of figures to be used for comparative purposes.

Since the Congress has adopted the principle of establishing in the law a contribution schedule designed to make the system self-supporting, it was necessary at the time the legislation was enacted to select a single set of estimates as the basis for the contribution schedule. The intermediate-cost estimate was used for this purpose. Quite obviously any specific schedule may require modification in the light of future experience, but the establishment of the schedule in the law does make clear the congressional intent that the system be self-

supporting. Exact self-support cannot be obtained from a specific set of integral or rounded fractional rates, but the intention to adhere as closely as possible to this principle of self-support was clearly expressed by the Congress in 1950 when it developed the tax schedule in the law, and again in 1952, 1954, and 1956 when further amendments were made.

The Congress thoroughly considered the matter of costs in the legislative development of the 1956 amendments—especially in the light of the revised estimates for the 1954 act which, recognizing the increased earnings level in covered employment, showed somewhat lower costs as a percentage of payroll than previously estimated. These lower costs produced a decrease in the financial deficiency of the old-age and survivors insurance benefits of the 1954 act, which reduced deficiency was approximately preserved in regard to such benefits in the 1956 act. Under the 1956 act, the disability insurance system showed a small surplus since the increase in the contribution rate to support the monthly disability benefits was slightly more than sufficient to meet the cost of these benefits under intermediate-cost estimates. The current estimates show a somewhat larger deficiency for the old-age and survivors insurance benefits and a slightly larger sufficiency for the disability insurance benefits. In light of the previous paragraph, it may be said that for practical purposes, on the intermediate-cost basis of the cost estimates presented here, the system is substantially in actuarial balance (i. e., the difference between the level-premium cost of benefits and the equivalent level contribution rate is within the margin of variation of long-range cost estimates).

Tables 13, 14, and 15 show the steady rise in benefit payments under the widely different sets of conditions discussed earlier in this section, and demonstrate the large increases, relatively and in absolute quantities, which would occur not only after 1980, but even after the turn of the century.

Because of the nature of the assumptions, the tables show only smooth trends, omitting the irregularities and periodic cyclical variations which may develop. These irregularities are expected to be far more pronounced in regard to contributions than benefits since, after the system is well established, the dollar amount of the benefit roll will contain a large proportion of fixed payments to permanently retired persons. However, the payroll of covered workers from which the contribution income is derived will react quite sensitively to increases or decreases in job opportunities, changes in the length of the workweek, and changes in unit rates of pay. For demographic reasons alone, as discussed earlier, it is unlikely that the system will level out, even eventually, to a completely fixed relationship between contributions and benefits.

Table 13 compares benefit costs related to payroll for the present estimates. The cost rises steadily under both estimates—temporarily leveling out somewhat between 1990 and 2000. The “ultimate” cost for the old-age and survivor benefits is reached some 50 years after the year 2000 at roughly 9.6 percent of payroll for the low-cost estimate, 14.4 percent for the high-cost estimate, and 11.5 percent for the intermediate-cost estimate. The “ultimate” cost for the disability benefits is reached considerably earlier—possibly to a considerable extent in 15 or 20 years—at about 0.25 percent of payroll for the

low-cost estimate, 0.5 percent for the high-cost estimate, and 0.35 percent for the intermediate estimate.

The interest assumption used in determining level-premium costs is 3 percent. The average rate on investments of the trust funds is currently about 2.6 percent (as of the end of 1957), but the open-market yield on long-range Government bonds is currently somewhat above 3 percent. The intermediate-cost estimate for the old-age and survivor benefits shows a level-premium cost of 7.90 percent of payroll at 3-percent interest. This figure may be contrasted with the level rate equivalent to the total graded contribution schedule in the law assigned to these benefits (taking into account the lower contributions payable by the self-employed as compared with the combined employer-employee rate), which is 7.33 percent of payroll (see section on Actuarial Status of the Trust Funds). Thus, this comparison indicates that according to these intermediate-cost figures, the tax schedule in the law makes this part of the program not quite self-supporting.

The level-premium cost for the monthly disability benefits is 0.35 percent of payroll on the intermediate basis, or somewhat below the equivalent of the contributions for these benefits. Thus, based on this estimate, the disability benefit aspects of the program are on a somewhat more than self-supporting basis.

Table 14 shows the progress of the old-age and survivors insurance trust fund under the present estimates. In the low-cost estimate, contribution income exceeds benefit disbursements in each of the 60 years following 1970. Accordingly, the trust fund continues to build up quite rapidly, and some 45 years hence it is growing at the rate of about \$9 billion per year (and at that time is about \$160 billion). On the other hand, under the high-cost estimate, benefit disbursements exceed contribution income in most years (the exceptions being those years shortly after some of the scheduled rises in the contribution rate), and the trust fund, after building up to a maximum of about \$29 billion in about 25 years, decreases thereafter until it becomes exhausted shortly after 1990.

These results for the low-cost and high-cost estimates are to be expected since the old-age and survivors insurance system on an intermediate-cost estimate is approximately self-supporting. Accordingly, a low-cost estimate should show that the system is more than self-supporting and a high-cost estimate should show that a deficiency will arise in later years. At any rate, it appears likely that there will be ample funds for several decades even with relatively unfavorable experience. In those cost illustrations where the system is shown to be more than self-supporting, the growth of the trust fund over the almost 100 years up to 2050 produces balances that are unrealistically large. It is unlikely that such a growth would develop in actual practice (or exhaustion of the fund, as shown in other instances) since the Congress would no doubt take some corrective or remedial action.

According to the intermediate-cost estimate, contribution income will exceed benefit disbursements in most years from 1965 until about 1985. After that, the excess of benefit disbursements and administrative expenses over contribution income is, for many years, met by interest earnings of the trust fund. Accordingly, the trust fund grows steadily, reaching a maximum of about \$84 billion in 2015 and then declines. This decrease is another indication that the tax

schedule in the law is not quite self-supporting under the intermediate-cost estimate.

Table 15 shows the progress of the disability insurance trust fund under the present estimates. In the low-cost estimate, contribution income exceeds benefit disbursements in all years. The fund would be about \$63 billion in the year 2000 and would be growing at the rate of almost \$3 billion a year. In the high-cost estimate, benefit disbursements exceed contribution income after the turn of the century, but the trust fund, reaching about \$17 billion at the time, continues to grow, due to interest income. Under the intermediate-cost estimate, contribution income exceeds benefit outgo in all years, and the trust fund of \$40 billion in the year 2000 is growing at a rate of about \$1.6 billion a year.

These results for the low-cost and high-cost estimates, as in the case of the old-age and survivors insurance trust fund, are to be expected since the disability system on an intermediate estimate basis is self-supporting. Thus, under the assumptions, the low-cost estimate is far more than self-supporting, and even the high-cost estimate is just barely self-supporting.

A factor mentioned earlier, but not used in the actuarial projections, is the trend observed in the past, of an irregular but upward movement in earnings, both on a dollar basis and in the form of real wages. If this secular trend continues, then—other things being equal and with no changes in the present provisions of the law—the curves of both benefits and contributions would be more steeply ascending than anticipated in the present estimate. The upward changes in the contribution curves, however, would be far more accentuated than such changes in the benefit curves. There are several reasons for this effect, the important one being that the benefit increase would be dampened because—

(1) Benefits are determined by the average monthly wage up to the maximum of \$350; 55 percent is applied to the first \$110 thereof and 20 percent to the part above \$110. As average earnings increase and more persons approach or reach the \$350 maximum, a larger portion of such earnings falls in that bracket of the benefit formula to which the 20-percent rather than the 55-percent rate applies. Thus benefits are smaller in relation to earnings, and consequently in relation to contributions.

(2) Contributions in any year are based substantially on the covered earnings of that year. Benefits in force in any year are based on weighted composite earnings of all previous years in which the insured persons on whose account the benefits are paid worked in covered employment, and in far-distant future years would include earnings of as much as 50 previous years.

The assumption of steadily rising earnings in conjunction with an unamended benefit formula would have an important bearing in considering the long-range cost of the program. With such an assumption, the future rise in earnings would seem to offer significant financial help in the financing of benefits because contributions at a fixed percentage rate would increase steadily relative to benefit disbursements. However, benefits paid would steadily diminish in relation to the current earnings level. As a result, offsetting this apparent savings in cost, is the likelihood that from the long-range point of view the present benefit formula would not be maintained.

In revising the benefit schedule to conform with the altered earnings level, the changed cost and contribution picture would have to be considered. This is especially true for changes resulting from the fact that benefits would be based on earnings prevailing at the time of the revision and thereafter, while the accumulated trust fund at that time would have developed from contributions on the lower earnings levels of the past. The fund thus would play a less important role in financing the program than it would if the earnings level had not changed. If it is assumed that the benefit level in the future will be adjusted in proportion to the increase in average earnings, the level-premium cost of the program, expressed as a percentage of taxable earnings in perpetuity, would be increased because of the diminishing part played by the accumulated trust funds in financing the program. For small annual rates of increase in average earnings (i. e., for rates less than the assumed valuation interest rate) this increase in cost may be partially counterbalanced by the timelag which would undoubtedly occur between the rise in earnings level and the amendment of the benefit provisions. However, for larger rates of increase in average earnings the level-premium cost in perpetuity would be the ultimate cost, because the fund would ultimately play virtually no role in the financing of the benefits. Nevertheless, during the course of this century at least the interest income from the fund would continue to be a significant amount in relation to total disbursements.

In addition to excluding the assumption of increasing wages in the future, the detailed cost estimates given have avoided dealing with various other important secular trends. These have diverse effects on costs which cannot be adequately extrapolated into the future. One illustration is the lengthening of the period of childhood or preparation for work. Another possibility is a drastic change in the average age of retirement, either to a considerably lower effective age so that practically all persons would retire at the minimum age of 65, or conversely to a higher effective age, under circumstances of greatly improved health conditions combined with good employment opportunities, such that few would retire before age 72 (after which, in any event, benefits are paid regardless of employment).

## APPENDIX II. LEGISLATIVE HISTORY AFFECTING THE TRUST FUNDS

*Board of Trustees.*—From January 1, 1940, when the Federal Old-Age and Survivors Insurance Trust Fund was established, through July 15, 1946, the three members of the Board of Trustees, who serve in an ex officio capacity, were the Secretary of the Treasury, the Secretary of Labor, and Chairman of the Social Security Board. On July 16, 1946, under the Reorganization Plan No. 2 of 1946, the Federal Security Administrator became ex officio member of the Board of Trustees in place of the Chairman of the Social Security Board, which Agency was abolished. On April 11, 1953, the Reorganization Plan No. 1 of 1953, creating the Department of Health, Education, and Welfare, went into effect, and the Office of Federal Security Administrator was abolished. The functions of the Administrator as ex officio member of the Board of Trustees were taken over by the Secretary of Health, Education, and Welfare. The remaining membership of the Board has not changed since it was first established.